

SM



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,610	06/08/2001	Hiroyuki Koshino	0051-0155P	6442

2292 7590 05/10/2004

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

MORAN, MARJORIE A

ART UNIT	PAPER NUMBER
----------	--------------

1631

DATE MAILED: 05/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

214

Office Action Summary	Application No. 09/857,610	Applicant(s) KOSHINO ET AL.	
	Examiner Marjorie A. Moran	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-16 and 18 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-11, 13-16 and 18 is/are rejected.
 7) ☒ Claim(s) 1, 13 and 18 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. In view of amendments to the claims filed 1/7/04 and 2/23/04, rejections to the claims made under 35 USC 112, 2nd paragraph which are not repeated below are hereby withdrawn. All other rejections are maintained for the reasons set forth below. Applicant's arguments filed 2/23/04 have been fully considered but they are not persuasive. The arguments are addressed below as they apply to the different rejections. Claims 1-11, 13-16, and 18 are pending.

Claim Objections

Claims 1, 13 and 18 are objected to because of the following informalities: In claim 1, the phrase "capable of causing" is awkward. The examiner recommends replacing the phrase with --which cause-- or rewriting the preamble for better clarity. See also the rejections made under 35 USC 112, 2nd paragraph. The term "a" before every recitation of "(n+...) level" should be --an-- in claims 1, 13, and 18. Appropriate correction is required.

Claim Rejections - 35 USC § 101

Claims 1-11, 14-16, and 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-11 and 14-16 are directed to a molecular stereochemistry coding computer program. A computer-program, per se, is not statutory. See MPEP 2106.IV.B.1(a):

"Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and Office personnel should treat a claim for a computer program, *without the computer-readable medium needed to realize the computer program's functionality*, as nonstatutory functional descriptive

material.

When a computer program is claimed in a process where the computer is executing the computer program's instructions, Office personnel should treat the claim as a process claim. ... When a computer program is recited in conjunction with a physical structure, such as a computer memory, Office personnel should treat the claim as a product claim.”
(Emphasis added by examiner.)

The claimed computer program is not limited to be embodied on a computer-readable medium, or embodied in a computer, etc. Claim 1 recites that results of the program be recorded on computer readable medium, but this is not a limitation that the program itself be embodied on a computer-readable medium wherein the instructions must functionally interact with a computer. It is noted that as the claims are directed to a program, per se, applicant's arguments with regard to a method are moot. Where applicant's arguments apply to a computer-implemented method, they are addressed below. Applicant is further advised that a step (e.g. in a method claim) which merely recites that results be recorded or printed on computer readable medium, not limited to be external to the computer, does not constitute a physical transformation or act performed outside the computer, and would not necessarily render a process comprising this step statutory.

Claim 18 is directed to a method apparently comprising a series of mathematical steps for data manipulation, equivalent to mental processes. Applicant is reminded that mental processes are not statutory subject matter under 35 USC 101.

The claimed method is not restricted to be a computer-implemented method; however, the specification indicates that the method is intended to be one implemented by a computer. In

the event that the claimed method steps are implemented by a computer, the method claims are not statutory as any computer implemented method must produce a result which is concrete, tangible, and useful. As set forth in MPEP 2106.IV.B:

"In practical terms, claims define nonstatutory processes if they:

- consist solely of mathematical operations without some *claimed* practical application (i.e., executing a "mathematical algorithm"); or

- simply manipulate abstract ideas, e.g., a bid (Schrader, 22 F.3d at 293-94, 30

USPQ2d at 1458-59) or a bubble hierarchy (Warmerdam, 33 F.3d at 1360, 31

USPQ2d at 1759), without some *claimed* practical application." (emphasis added by examiner)

As set forth in MPEP 2106.IV.B.2(b) (ii):

"A claim is limited to a practical application when the method, *as claimed*, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See AT &T, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in State Street, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in Alappat, 33 F.3d at 1544, 31 USPQ2d at 1557 (in banc). For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory." (emphasis added by examiner).

The result recited in the instant claims is the generation of a group of conformation codes. However, as no "practical application" for the group of conformation codes is recited in the claims, this is not a concrete, tangible, and useful result. As the claims merely recite steps of mathematically manipulating data, and the claimed method does not produce a concrete,

tangible and useful result, claim 18 does not recite statutory subject matter. Applicant argues, in the response filed 2/23/04, that there is no requirement for a utility to be expressly set forth in the claims. It is noted that the instant rejection is made under 35 USC 101, (non-statutory subject matter), not under 35 USC 112 (lack of utility). Arguments with regard to lack of utility are addressed below. It is noted that 35 USC 101 does expressly require that the CLAIMED subject matter be statutory. With regard to a requirement for a concrete, tangible and useful result, it is noted, as set forth above, that a computer-implemented method may be statutory where the method, AS CLAIMED, produces a concrete, tangible and useful result. Thus, while the claims need not recite a utility, the result of the claimed method must be concrete, tangible and useful. To further elucidate, an example of a method which merely recites mathematical manipulation of data and is NOT statutory is a method of modeling noise. This method is not statutory as the modeling is merely mathematical manipulation and the result does not represent any transformation of matter; i.e. there is no "practical application" or "concrete and tangible" result. This may be compared to a method of filtering noise, which is considered statutory, as the method results in an actual transformation of matter (the noise is actually "changed" by removal of certain wavelengths of sound). Applicant's arguments with regard to In re Freeman and In re Walter confirm that when an algorithm is "applied in any manner to physical elements or process steps", a claim reciting an algorithm (i.e. mathematical manipulation) may be statutory. The instant method merely recites mathematical manipulation without any actual transformation of matter or *physical* elements or process steps. The instant method is analogous to the "modeling of noise" method above. Representation of angles by linear notation and the recording thereof is equivalent to representation of musical notes in a computer memory and is not a transformation of matter. As the instant claim does not recite a concrete, tangible and useful result, the method is not statutory, and is thereby rejected.

Claims 1-11, 13-16 and 18 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility.

The claims are directed to a molecular stereochemistry coding program, method and computer readable medium comprising a program for running the method. The method and program comprise steps of mathematically manipulating data only.

The result produced by the method and program appears to be a group of conformation codes "with respect to" start atoms. The "usefulness" of a group of conformation codes, for an unknown molecule, is not apparent. Applicant argues in the response filed 2/23/04 that the instant method may be used to calculate NMR shifts, but does not elucidate how calculation of an NMR shift of a single, unknown molecule provides a utility for the claimed method, program or medium. As set forth in MPEP 2107, the utility of a claimed invention must be "immediately apparent to those familiar with the technological field of the invention." See also *Brenner v. Manson*, 383 U.S. 519, 148 USPQ 689 (1966); *In re Ziegler*, 992 F.2d 1197, 26 USPQ2d 1600 (Fed. Cir. 1993). In this regard, what is the "immediate use" to one of skill in the art of determining a conformation code and/or NMR shift for a single, random molecule?

As previously set forth, the specification does disclose, on pages 1-2, that stereochemical coding can be used to compare the three-dimensional conformation of molecules, or can be used to predict NMR chemical shifts. It is noted that in order for stereochemical coding information to be useful for these purposes, other information specific to a compound is required; e.g. identity, relationship to another molecule, NMR data, etc. One skilled in the art would need, at least, previously acquired data with regard to NMR spectra of other (presumably known) compounds in order to compare the instantly coded compound. It is noted that comparison of a compound with no known utility to a database of compounds with no

known utility does not impute utility to either the coded compound nor the database. In addition, the specification discloses that, in order for stereochemistry of molecules to be compared, both configuration and conformation codes are required (see pages 22-23) and further method steps are necessary to carry out the comparison; i.e. further research is required (see pages 23-34). As set forth on page 24, in order for a prediction of NMR chemical shifts to be made, three different sets of codes are required, in addition to further method steps. Again, prediction of an NMR chemical shift requires further research. As further research, mathematical calculations, data, and method steps would be required to "use" the conformation codes resulting from the claimed method and program, the result of the method and program is not "immediately useful" therefore the claims lack utility.

Claim 1-11, 13-16 and 18 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either an asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention. Applicant argues that as one would know how to configure a computer to possess the requisite functionality, one would know how to perform the instant invention. While it is admitted that one would know how to run a computer program, the examiner maintains that as the claims lack utility, as set forth above, a skilled artisan would not know what to use the invention for, therefore the claims are not enabled.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-11 and 13-16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a NEW MATTER rejection.

A computer program which comprises printing or recording a conformation code on computer-readable recording media, as recited in amended claim 1 and new claim 13, is new matter. The original claims did not recite any method or program reciting printing or recording a conformation code on computer-readable recording media. Page 6 of the originally filed specification discloses in lines 31-37 that a computer-readable recording medium may have "recorded" a program for executing a molecular stereochemical coding method, which is support for the computer-readable medium comprising instructions for performing a method, as in claim 13. However, the originally filed specification does not disclose anywhere that any result of the method or program, specifically a conformation code, be recorded on the computer-readable medium. Applicant does not point to support in the originally filed specification or claims for the newly recited limitations of claims 1 and 13 and none is apparent, as set forth above, therefore the claims are rejected for reciting new matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11, 13-16 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, in lines 3-4, recites a computer program comprising instructions "capable of causing" the computer "to take a stereochemistry..." This is grammatically incorrect and seemingly impossible as computers are not generally regarded in the art as capable of "taking" anything. As the confusion appears to be due to translation difficulties, the claim is rejected herein only for indefiniteness. The examiner recommends using a term generally consonant with computer functions such as --calculate--, --perform--, --define--, etc., which is closest to applicant's intended meaning.

Claims 1, line 14 recites performing steps until a final hierarchy "is made in a form which may be accessed by a processor". It is unclear what is intended by a "form which may be accessed by a processor". As the claim is directed to a computer program, any result of a program step is inherently one which may be "accessed" by a processor, therefore the claim appears to be enabled. However, as the specific "form" intended is unclear, the claim is indefinite.

Claim 13, line 14 and claim 18, lines 11-12 recite performing steps until a final hierarchy "is made in a form which may be accessed". It is unclear what the form is to be accessed by, therefore the claims are indefinite. If applicant intends the form to be accessed by a processor, as in claim 1, then the claims are still indefinite, as the "form" intended is unclear. See above.

Claims 1, 13 and 18 recite a step of forming a molecular tree "with a precedence rule", but fails to define the "precedence rule" to be used. No precedence rule is recited in the claims, therefore it is unclear what is intended by a step of placing atoms in order in accordance with "said precedence rule". In the response filed 2/23/04, applicant refers to a CANOST code and teachings of the prior art. While the specification and prior art do appear to enable the claims, it is noted that limitations of the specification can not be read into the claims. As it is unclear what

precedence rule is to be used to form the molecular tree in the claimed program and method, the claims are indefinite.

Claims 1, 13 and 18 recite forming a molecular tree wherein "said start atom from a lower hierarchical level to a higher hierarchical level is expressed in a bonding relationship between said plurality of atoms." This phrase is nonsensical, therefore the claims are indefinite. As recited in an earlier step, a start atom is assigned to a SINGLE hierarchical level (i.e. zero-th). Every atom DIRECTLY bonded to the start atom is placed in a second hierarchical level. Every atom bonded to atoms of the second level is assigned to a third level, and so on. A molecular tree is formed based on the relationship between levels. The logical conclusion is that the bonding relationship between any two CONSECUTIVE levels may be expressed in the tree thus formed, but not a relationship between a start atom and ALL atoms at ANY level, as apparently recited in the phrase above. As it is unclear what limitation applicant intends by this phrase, the claims are rejected herein only for indefiniteness.

Claims 1, 13 and 18 recite a step of expressing a molecular tree "with a linear notation rule", but fail to define the "linear notation rule" to be used. No linear notation rule is recited in the claims, therefore it is unclear what is intended by a step of carrying out linear notation of a set of angular symbols in accordance with "said linear notation rule". In the response filed 2/23/04, applicant refers to a CANOST code and teachings of the prior art. While the specification and prior art do appear to enable the claims, it is noted that limitations of the specification can not be read into the claims. As it is unclear what linear notation rule is to be used to express the molecular tree in the claimed program and method, the claims are indefinite.

Claim 2 is generally confusing. Claim 2 limits the program of claim 1 to further comprise instructions for preparing a configuration code for a start atom, but does not clearly recite what

the steps the instructions comprise. The preamble of the claim ends with "and"; the second paragraph of the claim recites "coding an atom". It is unclear whether "coding an atom" and subsequent "steps" are intended to be the "instructions" (for preparing a configuration code) of the preamble, or is/are intended to be additional steps to be performed after the preparation of the configuration code, as indicated by the instant language of the claim. Further, as the intended steps of the claim are not separated by line indentations or other clear demarcation, it is unclear what is intended to be a program step and what is intended to be a limitation of an atom. For example, the claim recites coding an atom, then integrally rotating all of the atoms of a hierarchical level around a bonding axis, "so that an atom...is positioned at an angular position...giving an angular symbol..." Does applicant intend to rotate atoms such that a particular angular position is achieved with respect to an atom at a reference position? As the steps intended are unclear, the claim is indefinite.

Claim 2 recites two "coding" steps, one in the second paragraph (coding an atom in the n-th hierarchical level) and one in the last line of the claim (preparing a configuration code). As claim 1 recites preparing a stereochemical code, and claim 2 recites further preparing a configuration code, it is unclear which is intended for the "coding an atom" of the second paragraph. Further, it is unclear when in the program of claim 1 the steps of claim 2 are intended to be performed. For these reasons, claim 2 is indefinite.

The penultimate paragraph of each of claims 1 and 13, and the last paragraph of claim 18 recite "preparing a conformation code...with respect to said start atom" and "preparing conformation codes with respect to other start atoms". The first paragraph of each claim recites start atoms, therefore the apparent steps of "preparing" conformation codes does have some connection to the rest of the claim; however, there is nothing which links preparation of conformation codes to any other step in the recited program or method. It is unclear what

relationship, if any, exists between preparing a conformation code and any other step of the claimed method. The lack of a recited connection or relationship between steps amounts to a gap in the method steps, therefore the claims are rejected. See MPEP § 2172.01.

Claims 6-8 recite the term "CANOST", which appears to be an abbreviation or acronym, as described in the prior art. However, as the term CANOST is not defined by the instant specification or claims, and the limitations of the instant claims are not necessarily those described by the prior art, it is unclear what the limitations are intended by applicant for linear notations, a precedence rule, and a linear notation rule. It is noted that prior art references may supply "background information" necessary for enablement, but may not be relied upon for written description or support for claim limitations. It is further noted that none of the references supplied by applicant for support and description of CANOST codes are incorporated by reference in the originally filed specification.

The term "low degree" in claim 9 is a relative term which renders the claim indefinite. The term "low degree" with regard to coding is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Further, it is unclear what is intended by a "low degree of coding", therefore the claim is further indefinite.

Claim 10 recites a "level of abundance" to be "unequally divided". The meaning of these phrases is unclear, therefore the claim is indefinite.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marjorie A. Moran whose telephone number is (571) 272-0720. The examiner can normally be reached on Mon. to Wed, 7:30-4; Thurs 7:30-6; Fri 7-1 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571)272-0722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1631

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marjorie A. Moran
Primary Examiner
Art Unit 1631

Marjorie A. Moran
5/5/09

mam